17. ***Parasarcophaga* *(s. str.) albiceps*** (Meigen)

Sarcophaga albiceps Meigen, 1826, *Syst. Beschr. europ. zweifl Insekt.* 5: 22.

Material examined: 1M, Horticulture Garden, Haddo, Port Blair, Andaman Island, 2.iii.1964, coll. B.S. Lamba; 1M, Netajinagar, Little Andaman, 18.i.1988 coll. A.N.T. Joseph; 1F, Galathea Bay, Great Nicobar, 28.iii.1966, coll. A. Daniel, & H.K. Bhowmick.

Distribution: Common in all parts of India including Andaman and Nicobar Islands.

18. ***Parasarcophaga* *(Liosarcophaga) dux*** (Thomson)

Sarcophaga dux Thomson, 1868, *K. svenska Fregatten Eugenies Resa*, Dipt., 2: 534.

Material examined: 1M, Campbell Bay, 3.iii.1966, coll. A. Daniel and H.K. Bhowmick.

Distribution: Andaman and Nicobar Islands, Assam, Bihar, Kashmir, Maharashtra, Meghalaya, Orissa, Punjab, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

ACKNOWLEDGEMENTS

We thank Dr. J.R.B. Alfred, Director, Zoological Survey of India, for study material, Dr. S.K. Mitra, Jt. Director for facilities and Dr. M. Datta, Scientist 'SE' and officer-in-charge, Diptera section for constant encouragement and valuable advice.

November 23, 1999

P. PARUI
B. MITRA
M. MUKHERJEE
R.S. MRIDHA
M-Block, New Alipore,
Zoological Survey of India,
Kolkata 700 053, West Bengal, India.

REFERENCE

SCHINER, I.R. (1868): Diptera, in Reise der Österreichischen Fregatte Novara, *Zool. Theil. 2*: 1-388.

26. SEASONAL OCCURRENCE OF *MELANITIS LEDA ISMENE* (CRAMER), SATYRIDAE: LEPIDOPTERA, WITH COMMENTS ON ITS DRY AND WET SEASON FORMS

(*With one text-figure*)

Melanitis leda ismene (Cramer) a butterfly of Family Satyridae (Order Lepidoptera) is widespread in West Africa, Southeast Asia and Australia (Bingham 1905, Talbot 1947, Grist and Lever 1969, Eliot 1992). It is the only nocturnal Rhopaloceran and is commonly found near fluorescent lights. The species is reported to be a pest of paddy (Ayyar 1961, Sajjan and Singh 1972) and has been collected from different parts of north India (Rose and Sharma 1998), but there is hardly any report on the biology of this species. Sajjan and Singh (1972) only mentioned the availability of its horned caterpillar on paddy in September-October, and the life span of the adults as 18-20 days.

This study was intended to observe the occurrence of wet and dry season forms and to examine the possible reasons for their appearance. The incidence of the dry and wet season forms in1998 was recorded.

The adults of *Melanitis leda ismene* were collected from the bushes and dry leaves under the forest trees, close to paddy fields around Chandigarh, where they hide during the day. A strip of forestland measuring 100 m x 40 m was selected for the collection of butterflies. Night

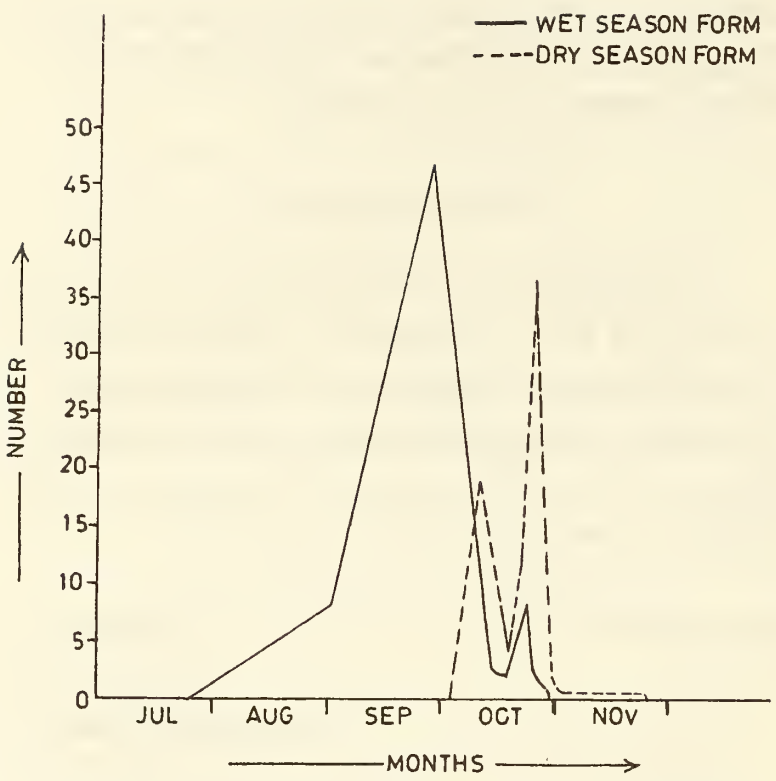

Fig. 1: Occurrence of dry and wet season forms of *Melanitis leda ismene* (Cramer) during 1998 in Chandigarh

collection was made from 10 fluorescent lights in the same area.

Regular surveys throughout 1998 showed that the adults appear during the last week of July in low numbers. During August, the butterflies were available in low numbers and about 4 to 7 adults were caught each day. All the adults caught during July and August were the wet season forms. The population of the wet season form started rising during the first week of September and reached a peak by end September. No dry season form was seen up to the end of September. In the beginning of October, the dry season form began to appear. To start with, the proportion of dry season form was low, but by the end of October, it was 12:1. The overall population reaches a maximum in October (Fig. 1), although the peak population of the wet season form was attained in September.

Clearly, the butterfly is active from July to October, when paddy is available. The butterfly appears to undergo diapause from the last week of November to last week of July. It is also evident that the butterfly undergoes more than two active generations, the life cycle being of 20-22 days.

Dry and wet season forms are seen in many Rhopalocera (Bingham 1905, Talbot 1947). These forms show marked differences in wing markings. Generally, wet season forms have ocelli on both surfaces of the wings and are known as ocellated forms. The dry season forms are devoid of such ocelli.

Melanitis leda ismene wet and dry season forms (Ph. 1-4) are recorded here. This species is a pest of paddy, but can also survive on other grasses. The caterpillars of the first generation, which feed on paddy leaves, mature into adults of the wet season form. With the ripening of the paddy leaves, some of the caterpillars of the subsequent generations start feeding on grasses, and mature into the dry season form. No satisfactory explanation has been offered for their appearance, and for their common incidence during certain periods. It appears that change of host is responsible for the appearance of dry season forms. This also explains the occurrence of both forms during the transition period. In most cases, the so called wet and dry season forms appear in the presence or absence of the monsoon, but this does not explain the morphological changes fully.

ACKNOWLEDGEMENTS

I thank the Chairman, Department of Zoology, Panjab University, Chandigarh for research facilities and Prof. H.R. Pajni for constructive criticism.

January 10, 2001

V.K. WALIA
Department of Zoology,
Panjab University,
Chandigarh 160 014,
Punjab,India.

REFERENCES

AYYAR, T.V.R. (1963): Handbook of Economic Entomology for South India. Govt. Press, Madras. pp. 154.

BINGHAM, C.T. (1905): The Fauna of British India, including Ceylon and Burma. Butterflies. Francis and Taylor, London, *Vol. 1*: 1-511, pls. 1-110.

ELIOT, J.N. (1992): The butterflies of the Malay Peninsula by A. Steven Corbet and H.M. Pendlebury. 4th Edn. Malay Nat. Soc. viii+595 pp. 69.

GRIST, D.H. & R.J.A.W. LEVER (1969): Pests of Rice. Longmans, London. pp. 161-162.

ROSE. H.S. & NARENDER SHARMA (1998): Role of genitalia in the identification of *Melanitis* species (Lepidoptera: Satyridae). *Uttar Pradesh J. Zoo. 18(2)*: 81-86.

SAJJAN, S.S. & J. SINGH (1972): Occurrence of horned caterpillar of Rice, *Melanitis leda ismene* (Cramer) Satyridae: Lepidoptera on paddy in Punjab. *Science and Cult. 38(4)*: 215-216.

TALBOT, G. (1947): Fauna of British India including Ceylon and Burma, Butterflies Taylor and Francis, London. *Vol. 2.* pp. 506.

27. MOLLUSCAN FAUNA AND ITS DISTRIBUTION IN THE WILD ASS SANCTUARY

Very little is known about minor animal forms, namely plankton, annelids, arthropods, molluscs, in almost all the Protected Areas in the country. No work has been conducted on the molluscan fauna of the Wild Ass Sanctuary (WAS), hence an attempt was made to study their diversity in the Sanctuary. From the management point of view, these animals are considered minor for the protected area, but they are found in a variety of habitats, show many adaptations and play a key role in maintenance of the habitat, which they share with more conspicuous wildlife, to which the majority of management practices are addressed in our country.

The Wild Ass Sanctuary is spread mainly over the Little Rann of Kutch, Gujarat State. It is situated between 23° 10' and 23° 45' N, and between 70° 45' and 71° 45' E. The Little Rann (4,953.59 sq. km) is a vast saline desert, typically arid and one of its kind in the world. It experiences a maximum temperature of 44 °C and a minimum of 5 °C, and receives 125 to 400 mm of rainfall. Three major rivers from the east, Banas, Saraswati and Rupen, inundate the Little Rann, where sea water also enters, and make a huge wetland. The Little Rann is just above sea level, and the Wild Ass Sanctuary is spread over five districts namely Rajkot, Surendranagar, Mehsana, Banaskantha and Kutch.

The study was conducted from December 1, 1997 to July 15, 1998. The material was collected in the waterbodies, muddy areas, creeks and a variety of habitats. The molluscs were narcotised by magnesium sulphate before preservation in 4% formaline or 70% alcohol. The samples were labeled and identified in the laboratory using standard references such as Hornell (1951), Kundu (1965), Menon *et al.* (1961) and Tonapi (1980). The Zoological Survey of India confirmed the identifications.

12 species (Table 1) representing 12 mollusc families were collected and identified; out of these 7 species belonged to 7 freshwater families and 5 to 5 brackish water families.

ACKNOWLEDGEMENTS

We thank Dr. H. S. Singh, Director, Gujarat Ecological Education and Research Foundation (GEER Foundation), Gandhinagar for financial support, Mr. B.H. Patel (D.C.F. GEER Foundation), Mr. M.B. Patel (R.F.O. GEER Foundation) and Mr. S.A. Babi (A.C.F. Wild Ass Sanctuary, Dhrangadhra) and his staff, for their kind cooperation and help, and the ZSI for identifications.

April 28, 1999 V.C. SONI, K.P. BHALODIA,
S.M. DAVE, V.J. BHUVA
Dept. of Biosciences, Saurashtra University,
Rajkot 360 005, Gujarat, India.